

CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Previously Presented) A wireless network device for communicating with a network, the wireless network device comprising:

a memory to store an image, the image comprising a plurality of virtual machines and only one multi-tasking operating system,

wherein each of the plurality of virtual machines comprises one of a plurality of wireless network applications to execute on the multi-tasking operating system;

a processor to execute the plurality of virtual machines; and

a port comprising

a physical-layer device to communicate with the network, and

a media access controller to communicate with the physical-layer device and the processor,

wherein the memory comprises one of a plurality of virtual machine queues for each of the plurality of virtual machines and a processor queue for the processor that is separate from the plurality of virtual machine queues,

wherein the processor stores data to be processed in the processor queue for members of the plurality of virtual machines being executed by the processor,

wherein each respective one of the plurality of virtual machines creates a copy in a respective one of the plurality of virtual machine queues of the data in the processor queue when the processor is executing the respective one of the plurality of virtual machines, and

wherein when the processor resumes executing a first of the plurality of virtual machines after executing a second of the plurality of virtual machines, the first of the plurality of virtual machines copies the data from the respective one of the plurality of virtual machine queues for the first of the plurality of virtual machines to the processor queue.

2. (Previously Presented) The wireless network device of claim 1, wherein each of the plurality of virtual machines is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

3. (Previously Presented) The wireless network device of claim 1, wherein the memory comprises a non-volatile memory, and the wireless network device further comprises:

a volatile memory; and

a memory controller to create a copy of the image from the non-volatile memory to the volatile memory;

wherein the processor executes the plurality of virtual machines from the volatile memory.

4. (Cancelled)

5. (Previously Presented) The wireless network device of claim 1, wherein at least one of the plurality of wireless network applications is selected from the group consisting of:

a wireless network access point;

a wireless network client;

a wireless network point-to-point bridge;

a wireless network multi-point bridge; and

a wireless network repeater.

6. (Previously Presented) The wireless network device of claim 1, wherein the image further comprises:

a plurality of virtual machine device drivers to communicate with the plurality of virtual machines; and

a media access controller device driver to communicate with the plurality of virtual machine device drivers and the media access controller.

7. (Previously Presented) The wireless network device of claim 1, further comprising:

an input device to select one or more of the plurality of virtual machines;

wherein the processor executes the one or more of the plurality of virtual machines selected by the input device.

8. (Previously Presented) The wireless network device of claim 1, wherein the processor executes the plurality of virtual machines concurrently.

9. (Currently Amended) The wireless network device of claim 1:

wherein the plurality of virtual machines comprise a wireless network access point virtual machine and a wireless network client virtual machine;

wherein the processor executes the wireless network access point virtual machine and the wireless network client virtual machine concurrently;

wherein the wireless network client virtual machine comprises

a first virtual wireless port to communicate with the port, and

a first virtual ~~bridge~~ bridge to communicate with the first virtual wireless port; and

wherein the wireless network access point virtual machine comprises

a second virtual wireless port to communicate with the port,

a virtual distribution service port to communicate with the first virtual bridge, and

a second virtual bridge to communicate with the second virtual wireless port and the virtual distribution service port.

10. (Previously Presented) A method for a wireless network device to communicate with a network, the method comprising;

storing an image in the wireless networking device, the image comprising a plurality of virtual machines and only one multi-tasking operating system, wherein each of the plurality of virtual machines comprises one of a plurality of wireless network applications to execute on the multi-tasking operating system;

executing the plurality of virtual machines;

creating one of a plurality of virtual machine queues for each of the plurality of virtual machines and a processor queue for a processor that is separate from the plurality of virtual machine queues;

storing, in the processor queue, data to be processed for one of the plurality of virtual machines that is being executed; and

creating a copy in one of the plurality of virtual machine queues of the data in the processor queue when the one of the plurality of virtual machines is executing,

wherein when the one of the plurality of virtual machines resumes executing after another of the plurality of virtual machines was executing, copying the data from the one of the plurality of virtual machine queues to the processor queue.

11. (Original) The method of claim 10, wherein the wireless network device is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

12. (Previously Presented) The method of claim 10, wherein the image is stored in a non-volatile memory of the wireless network device, and the method further comprises:

copying the image from the non-volatile memory to a volatile memory; and

wherein the plurality of virtual machines are executed from the volatile memory.

13. (Cancelled)

14. (Previously Presented) The method of claim 10, wherein at least one of the plurality of wireless network applications is selected from the group consisting of:

a wireless network access point;

a wireless network client;

a wireless network point-to-point bridge;

a wireless network multi-point bridge; and

a wireless network repeater.

15. (Previously Presented) The method of claim 10, further comprising:

executing selected ones of the plurality of virtual machines in accordance with an input.

16. (Previously Presented) The method of claim 10, further comprising:

executing the plurality of virtual machines concurrently.

17. (Previously Presented) A wireless network device for communicating with a network, the wireless network device comprising:

a memory to store an image, the image comprising a plurality of virtual machines and only one multi-tasking operating system, wherein each of the plurality of virtual machines comprises one of a plurality of wireless network applications to execute on the multi-tasking operating system;

a plurality of virtual machine device drivers, wherein each one of the plurality of virtual machines directly communicates with a respective one of the plurality of virtual machine device drivers;

a processor to execute the plurality of virtual machines; and

a bus to communicate with the processor and the network,

wherein the memory comprises one of a plurality of virtual machine queues for each of the plurality of virtual machines and a processor queue for the processor that is separate from the plurality of virtual machine queues,

wherein the processor stores data to be processed in the processor queue for members of the plurality of virtual machines being executed by the processor,

wherein each respective one of the plurality of virtual machines creates a copy in a respective one of the plurality of virtual machine queues of the data in the processor queue when the processor is executing the respective one of the plurality of virtual machines, and

wherein when the processor resumes executing a first of the plurality of virtual machines after executing a second of the plurality of virtual machines, the first of the plurality of virtual machines copies the data from the respective one of the plurality of virtual machine queues for the first of the plurality of virtual machines to the processor queue.

18. (Previously Presented) The wireless network device of claim 17, wherein each of the plurality of virtual machines is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

19. (Previously Presented) The wireless network device of claim 17, wherein the memory comprises a non-volatile memory, and the wireless network device further comprises:

a volatile memory; and

a memory controller to create a copy of the image from the non-volatile memory to the volatile memory,

wherein the processor executes the plurality of virtual machines from the volatile memory.

20. (Cancelled)

21. (Previously Presented) The wireless network device of claim 17, wherein the image further comprises:

a bus interface driver to communicate with the plurality of virtual machine device drivers and the bus.

22. (Original) The wireless network device of claim 17, further comprising:

a physical-layer device to communicate with the network; and

a media access controller to communicate with the physical-layer device and the bus.

23. (Previously Presented) The wireless network device of claim 22, wherein the image further comprises:

a first bus interface driver to communicate with the plurality of virtual machine device drivers and the bus;

a second bus interface driver to communicate with the bus; and

a media access controller device driver to communicate with the second bus interface driver and the media access controller.

24. (Previously Presented) The wireless network device of claim 17, wherein at least one of the plurality of wireless network applications is selected from the group consisting of:

a wireless network access point;

a wireless network client;

a wireless network point-to-point bridge;

a wireless network multi-point bridge; and

a wireless network repeater.

25. (Previously Presented) The wireless network device of claim 17, further comprising:

an input device to select one or more of the plurality of virtual machines;

wherein the processor executes the one or more of the plurality of virtual machines selected by the input device.

26. (Previously Presented) The wireless network device of claim 17, wherein the processor executes the plurality of virtual machines concurrently.

27. (Previously Presented) The wireless network device of claim 17:

wherein the plurality of virtual machines comprise a wireless network access point virtual machine and a wireless network client virtual machine;

wherein the processor executes the wireless network access point virtual machine and the wireless network client virtual machine concurrently;

wherein the wireless network client virtual machine comprises

a first virtual wireless port to communicate with the bus, and

a first virtual bridge to communicate with the first virtual wireless port; and

wherein the wireless network access point virtual machine comprises

a second virtual wireless port to communicate with bus,

a virtual distribution service port to communicate with the first virtual bridge, and

a second virtual bridge to communicate with the second virtual wireless port and the virtual distribution service port.

28. (Previously Presented) A wireless network device for communicating with a network, the wireless network device comprising:

memory means for storing an image, the image comprising a plurality of virtual machines and only one multi-tasking operating system, wherein each of the plurality of virtual machines comprises one of a plurality of wireless network applications to execute on the multi-tasking operating system;

processing means for executing the plurality of virtual machines; and

port means comprising

physical-layer means for communicating with the network, and

media access control means for communicate with the physical-layer means and the processing means,

wherein the memory means comprises one of a plurality of virtual machine queues for each of the plurality of virtual machines and a processor queue for the processing means that is separate from the plurality of virtual machine queues,

wherein the processing means stores data to be processed in the processor queue for members of the plurality of virtual machines being executed by the processing means,

wherein each respective one of the plurality of virtual machines creates a copy in a respective one of the plurality of virtual machine queues of the data in the processor queue when the processing means is executing the respective one of the plurality of virtual machines, and

wherein when the processing means resumes executing a first of the plurality of virtual machines after executing a second of the plurality of virtual machines, the first of the plurality of virtual machines copies the data from the respective one of the plurality of virtual machine queues for the first of the plurality of virtual machines to the processor queue.

29. (Previously Presented) The wireless network device of claim 28, wherein each of the plurality of virtual machines is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

30. (Previously Presented) The wireless network device of claim 28, wherein the memory means comprises non-volatile memory means, and the wireless network device further comprises:

volatile memory means; and

memory controller means for creating a copy of the image from the non-volatile memory means to the volatile memory means;

wherein the processing means executes the plurality of virtual machines from the volatile memory means.

31. (Cancelled)

32. (Previously Presented) The wireless network device of claim 28, wherein at least one of the plurality of wireless network applications is selected from the group consisting of:

- a wireless network access point;
- a wireless network client;
- a wireless network point-to-point bridge;
- a wireless network multi-point bridge; and
- a wireless network repeater.

33. (Previously Presented) The wireless network device of claim 28, wherein the image further comprises:

a plurality of virtual machine device drivers to communicate with the plurality of virtual machines; and

a media access controller device driver to communicate with the plurality of virtual machine device drivers and the media access control means.

34. (Previously Presented) The wireless network device of claim 28, further comprising:

input means for selecting one or more of the plurality of virtual machines;

wherein the processing means executes the one or more of the plurality of virtual machines selected by the input means.

35. (Previously Presented) The wireless network device of claim 28, wherein the processing means executes the plurality of virtual machines concurrently.

36. (Previously Presented) The wireless network device of claim 28:

wherein the plurality of virtual machines comprise a wireless network access point virtual machine and a wireless network client virtual machine;

wherein the processing means executes the wireless network access point virtual machine and the wireless network client virtual machine concurrently;

wherein the wireless network client virtual machine comprises

a first virtual wireless port to communicate with the port means, and

a first virtual bridge to communicate with the first virtual wireless port; and

wherein the wireless network access point virtual machine comprises

a second virtual wireless port to communicate with the port means,

a virtual distribution service port to communicate with the first virtual bridge, and

a second virtual bridge to communicate with the second virtual wireless port and the virtual distribution service port.

37. (Previously Presented) A computer program embodying instructions recorded on a computer readable medium executable by a computer for a wireless network device to communicate with a network, the computer program comprising instructions for:

storing an image in the wireless network device, the image comprising a plurality of virtual machines and only one multi-tasking operating system, wherein each of the plurality of virtual machines comprises one of a plurality of wireless network applications to execute on the multi-tasking operating system;

executing the plurality of virtual machines;

creating one of a plurality of virtual machine queues for each virtual machine and a processor queue for a processor that is separate from the plurality of virtual machine queues;

storing, in the processor queue, data to be processed for one of the plurality of virtual machines that is being executed; and

creating a copy in one of the plurality of virtual machine queues of the data in the processor queue when the one of the plurality of virtual machines is executing,

wherein when the one of the plurality of virtual machines resumes executing after another of the plurality of virtual machines was executing, copying the data from the one of the plurality of virtual machine queues to the processor queue.

38. (Previously Presented) The computer program of claim 37, wherein the wireless network device is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

39. (Previously Presented) The computer program of claim 37, wherein:

the image is stored in a non-volatile memory, and

the computer program further comprises instructions for:

copying the image from the non-volatile memory to a volatile memory,

wherein the plurality of virtual machines are executed from the volatile memory.

40. (Cancelled)

41. (Previously Presented) The computer program of claim 37, wherein at least one of the plurality of wireless network applications is selected from the group consisting of:

- a wireless network access point;
- a wireless network client;
- a wireless network point-to-point bridge;
- a wireless network multi-point bridge; and
- a wireless network repeater.

42. (Previously Presented) The computer program of claim 37, further comprising instructions for:

executing selected ones of the plurality of virtual machines in accordance with an input.

43. (Previously Presented) The computer program of claim 37, further comprising instructions for:

executing a plurality of the plurality of virtual machines concurrently.

44. (Previously Presented) A wireless network device for communicating with a network, the wireless network device comprising:

memory means for storing an image, the image comprising a plurality of virtual machines and only one-multi-tasking operating system, wherein each of the plurality of virtual machines comprises one of a plurality of wireless network applications to execute on the multi-tasking operating system;

processing means for executing the plurality of virtual machines;

a plurality of virtual machine device drivers, wherein each of the plurality of virtual machines directly communicates with a respective one of the plurality of virtual machine device drivers; and

bus means for communicating with the processing means and the network,

wherein the memory means comprises one of a plurality of virtual machine queues for each of the plurality of virtual machines and a processor queue for the processing means that is separate from the plurality of virtual machine queues,

wherein the processing means stores data to be processed in the processor queue for members of the plurality of virtual machines being executed by the processing means,

wherein each respective one of the plurality of virtual machines creates a copy in a respective one of the plurality of virtual machine queues of the data in the processor queue when the processing means is executing the respective one of the plurality of virtual machines, and

wherein when the processing means resumes executing a first of the plurality of virtual machines after executing a second of the plurality of virtual machines, the first of the plurality of virtual machines copies the data from the respective one of the plurality of virtual machine queues to the processor queue.

45. (Previously Presented) The wireless network device of claim 44, wherein each of the plurality of virtual machines is compliant with a standard selected from the group consisting of IEEE standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n.

46. (Previously Presented) The wireless network device of claim 44, wherein the memory means comprises non-volatile memory means, and the wireless network device further comprises:

volatile memory means; and

memory controller means for creating a copy of the image from the non-volatile memory means to the volatile memory means;

wherein the processing means executes the plurality of virtual machines from the volatile memory means.

47. (Cancelled)

48. (Previously Presented) The wireless network device of claim 44, wherein the image further comprises:

a bus interface driver to communicate with the plurality of virtual machine device drivers and the bus means.

49. (Previously Presented) The wireless network device of claim 44, further comprising:

a physical-layer device means for communicating with the network; and

media access control means for communicating with the physical-layer device means and the bus means.

50. (Previously Presented) The wireless network device of claim 49, wherein the image further comprises:

a plurality of virtual machine device drivers to communicate with the plurality of virtual machines;

a first bus interface driver to communicate with the plurality of virtual machine device drivers and the bus means;

a second bus interface driver to communicate with the bus means; and

a media access controller device driver to communicate with the second bus interface driver and the media access control means.

51. (Previously Presented) The wireless network device of claim 44, wherein at least one of the plurality of wireless network applications is selected from the group consisting of:

- a wireless network access point;
- a wireless network client;
- a wireless network point-to-point bridge;
- a wireless network multi-point bridge; and
- a wireless network repeater.

52. (Previously Presented) The wireless network device of claim 44, further comprising:

input means for selecting one or more of the plurality of virtual machines,

wherein the processing means executes the one or more of the plurality of virtual machines selected by the input means.

53. (Previously Presented) The wireless network device of claim 44, wherein the processing means executes a plurality of the plurality of virtual machines concurrently.

54. (Previously Presented) The wireless network device of claim 44:

wherein the plurality of virtual machines comprise a wireless network access point virtual machine and a wireless network client virtual machine;

wherein the processing means executes the wireless network access point virtual machine and the wireless network client virtual machine concurrently;

wherein the wireless network client virtual machine comprises

a first virtual wireless port to communicate with the bus means, and

a first virtual bridge to communicate with the first virtual wireless port; and

wherein the wireless network access point virtual machine comprises

a second virtual wireless port to communicate with the bus means,

a virtual distribution service port to communicate with the first virtual bridge, and

a second virtual bridge to communicate with the second virtual wireless port and the virtual distribution service port.